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ABSTRACT

Researchers predict the number of people in the United States workforce could exceed 180 million by 2028, but, if employment demands continue to expand at current levels, the number of jobs could approach 200 million. Skills needed to perform those jobs will continue to grow, requiring higher levels of training to perform all jobs, including those viewed as low-skilled or unskilled. An aging population and larger percentage of minorities in the work force add to this already critical situation. Jobs requiring training beyond high school will grow nearly twice as fast as those requiring less training, increasing pressure on postsecondary educational institutions to accommodate demand. Technical and soft skills will continue to replace static skill sets as employers react to changes and innovation in the marketplace. To enable workers to obtain relevant training in as timely and cost-effective a manner as possible, alternative methods of educational delivery have emerged--distance learning and online "e-learning" at existing educational institutions and through new virtual postsecondary institutions and training organizations. Companies partner with community colleges and training organizations to develop programs tailored to company needs. All this education and training will result in a more efficient, flexible, and smarter workforce. However, to avoid severe shortages in adequately trained workers, employers and educators will need to work together more closely to ensure workers receive the training employers need. (YLB)

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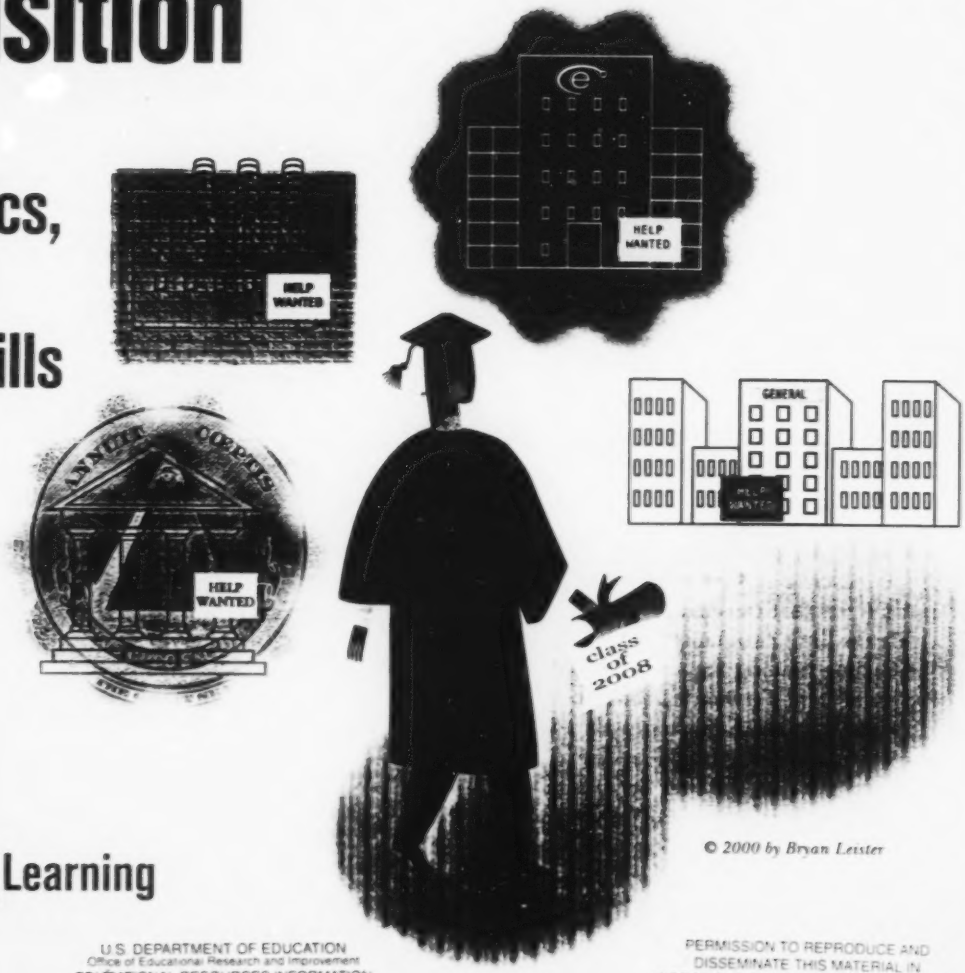
Workforce Economics

Vol. 6, Issue 2, Fall 2000

UNDERSTANDING CHANGE IN WORK AND THE WORKPLACE

A Workforce in Transition

Changing Demographics, Job Growth and New Skills



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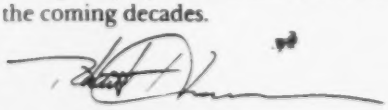
From the Editor

This edition of *Workforce Economics* examines the present and future labor demand and the supply of skilled workers. The workforce has expanded by 40 million jobs since 1982, and each year more workers are entering the labor market with post-secondary training. Projections over the coming decade indicate that the pace of growth in employment is unlikely to abate, while the pace of technological integration into the workforce will accelerate.

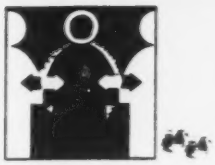
As the economy continues to expand and as jobs grow in complexity, two shortages loom: the shortage of workers and, even more acute, the shortage of adequately trained workers. Projections show that the worker dearth could approach 20 million within 30 years. Similarly, the lack of appropriately skilled workers in all occupational areas could greatly effect the future competitiveness of the country.

Preparing the future workforce to meet the needs of employers will increase pressure on postsecondary institutions to expand access to meet that demand. The pressure to accommodate all students and workers seeking training in the coming years will alter the postsecondary landscape, placing greater emphasis on institutions that can provide shorter credentialling programs and other just-in-time training methods, including online and distance learning.

Finding a sufficient supply of workers and ensuring that those workers have the training necessary to perform their jobs is the key task facing employers and educators in the coming decades.



Robert Harmon
Director of Economic Research
National Alliance of Business



TIMSS-R Released

The first follow-up to the Third International Mathematics and Science Study (TIMSS) was released Dec. 5, 2000. This much-anticipated report chronicles the progress of students tested in math and science in 1995, when they were in fourth grade, through 1999, when they were in eighth grade. The study compares those students against their peers in other countries and against eighth graders in 1995. Results indicate that little change occurred in student achievement, in international comparisons and relative to eighth graders tested in 1995. Specifically:

- There was no change in eighth-grade mathematics or science performance in the United States between 1995 and 1999. This was equally true for eighth-grade students in almost all of the 23 nations that participated in the study.
- The mathematics and science performance for eighth graders in the United States was lower in 1999 than it was for fourth graders four years earlier relative to other nations. This means that although U.S. students learned a lot of math and science from the fourth to the eighth grade, students in other nations learned more.
- U.S. eighth-grade students were less likely to be taught by a mathematics or science teacher with a bachelor's or master's degree in their teaching area than were their peers in other countries and more likely to be taught by a mathematics or science teacher with a major in education.

A synopsis of findings from the TIMSS–R is available online at http://nces.ed.gov/commissioner/remarks2000/12_5_2000.asp, and the full report is available from the U.S. Department of Education at http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2001028. For the implications of TIMSS–R, see the January 2001 issue of *WorkAmerica*.

Teacher Quality Matters

A recent report entitled *How Teaching Matters — Bringing the Classroom Back Into Discussions of Teacher Quality*, funded by the Milken Family Foundation and published by the Educational Testing Service, provides statistical evidence that better prepared and trained teachers do improve the performance of students in math and science.

The study found that students in math and science were more likely to have higher scores on the National Assessment of Education Progress test than their grade-level peers if their teachers were more effective. Attributes of effective teachers included having a major or minor in the subject they teach, receiving professional development, emphasizing higher-order thinking skills, using hands-on learning techniques, and frequent testing, according to the study.

To view this report online, visit the ETS Web site at www.ets.org/research/pic/teamat.pdf. Printed copies may be obtained by calling the ETS Policy Information Center at 609/734-5694.

A Workforce in Transition

Changing Demographics, Job Growth and New Skills

The workforce of the future will be better-educated, older and more flexible than at any time in the past. Enrollment in postsecondary institutions around the country is swelling, surpassing 14 million full- and part-time students, and more workers than ever have received some form of postsecondary training. However, the aging workforce, combined with the growth of jobs requiring increasingly sophisticated skills, points to a serious situation — the already dire shortage of workers, particularly trained workers, will worsen in the coming decades.

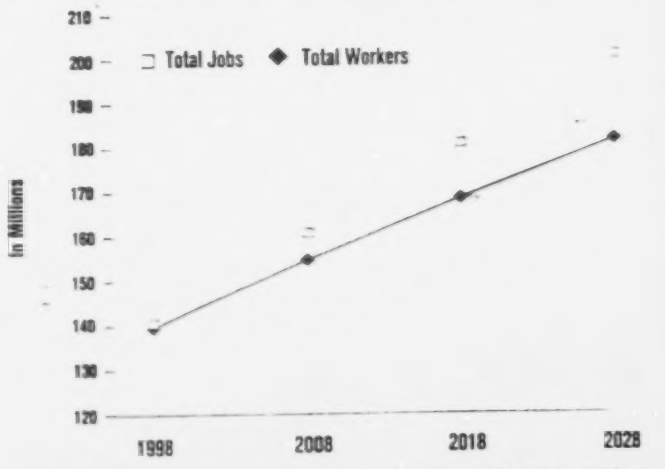
The importance of lifelong learning will increase for virtually all careers during the coming decades — by 2015, 31 percent of all new postsecondary students will be 35 years of age or older, according to *Crossing the Great Divide*, a report by the Educational Testing Service. Better access to postsecondary training allows greater opportunities for both high school graduates and workers seeking additional skills in place of or to complement traditional two- and four-year degrees. Evidence of this already can be seen in community colleges, where more than half of all students — 5.5 million — are enrolled in noncredit courses.

Diversity, Worker Shortages and the Need for Skills

By combining population growth projections for the next 30 years with the present rate of labor market participation, researchers predict that the number of people in the workforce could exceed 180 million by 2028. However, if employment demands continue to expand at the levels they have over the past 20 years, the number of jobs could approach 200 million, leaving nearly 20 million unfilled positions by 2028 (Figure 1).

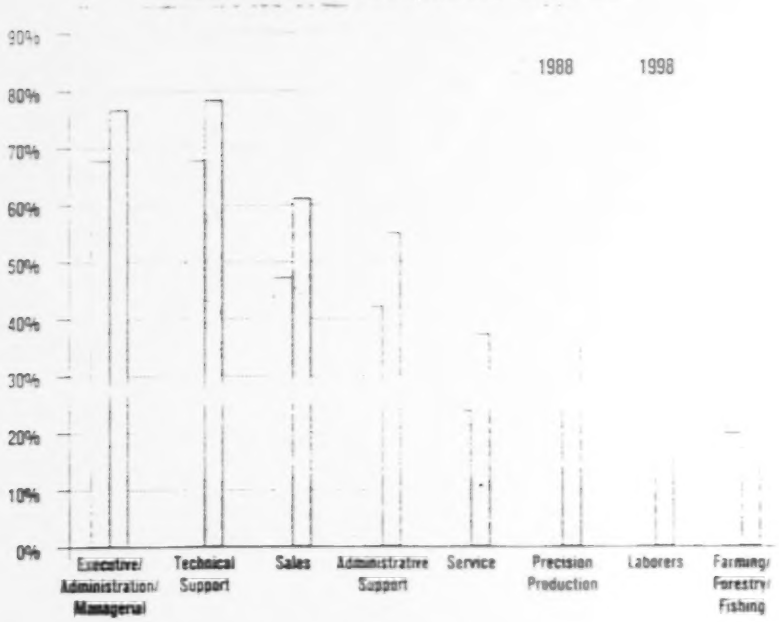
Not only is the number of jobs going to grow faster than the available labor force, the skills needed to perform those jobs will continue to grow as well, requiring higher levels of training to perform all jobs, including those now largely viewed as low-skilled or unskilled jobs (Figure 2). The reskilling of the workplace is evident in such occupations as auto mechanics, factory machine operators, assembly line workers, bank tellers and stockroom employees. Computing technology and network- and Internet-based processes consistently are increasing the complexity of what once were considered to be largely unskilled positions.

Figure 1: Growth in Jobs and Labor Supply, 1998–2028 (projected)



Source: U.S. Department of Labor, Bureau of Labor Statistics, U.S. Census Bureau and National Alliance of Business

Figure 2: Percentage of Workers with Post-High School Education by Occupation, 1988–98

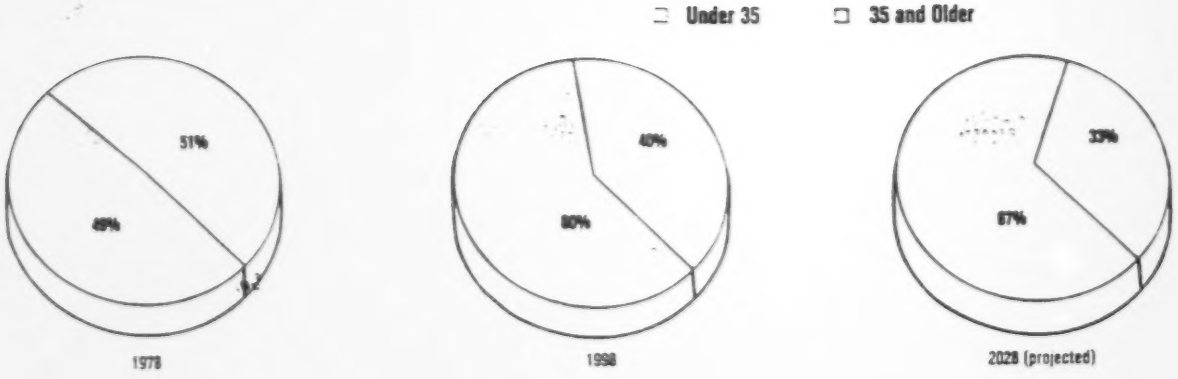


Source: U.S. Department of Education and National Center for Education Statistics

An aging population adds to this already critical situation. In 1978, those over 35 made up less than half of the overall workforce; by 2028, this proportion could reach two-thirds (Figure 3). This means that though the economy will continue to add new jobs, more workers will be leaving the workforce via retirement within the next 30 to 40 years than will be entering, further exacerbating the expected labor shortage.

Another important characteristic of the nation's future workforce is the growth of the minority population. Within the next half-century, minorities will approach 50 percent of the nation's population and will account for nearly 40 percent of the workforce in less time than that. The key is to ensure that minority students and workers receive a strong educational foundation as well as the specific training and skills to fill the high-skilled jobs that will be most in demand. The good news: 80 percent of the growth in postsecondary enrollments during the next 15 years will be by minority students. The bad news: Even this increase in minority student education won't provide relief from the anticipated dearth of workers. An even faster rate of growth in postsecondary education and training must occur in urban and rural areas to ensure that these students have an opportunity to acquire the

Figure 3: Projected Age Distribution of the Workforce, 1978–2028 (projected)



Source: U.S. Census Bureau

necessary skills to impact the future workforce shortage.

Finally, as the economic and educational levels of other countries improve, the need for an efficient and effective workforce becomes vital to the ability of U.S. companies to compete.

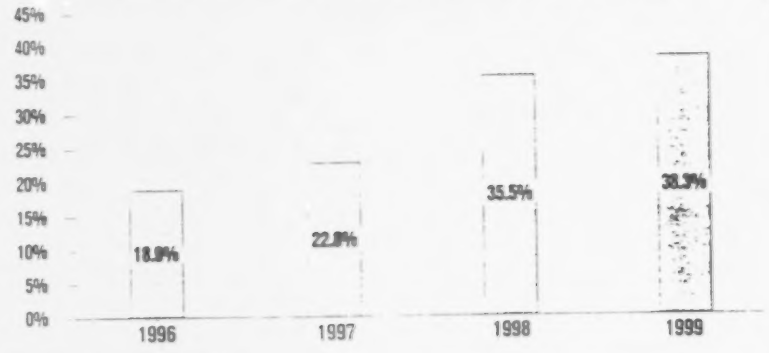
New Challenges for Workforce Training

The increasing complexity of jobs has led to the phenomenon of job skills accelerating so quickly that training programs and institutions have difficulty responding. For example, according to the American Management Association's annual survey of businesses, 19 percent of job applicants in 1996 lacked the necessary skills to perform the job for which they applied. By 1999, that figure had doubled to 38 percent (Figure 4). The direct cause for this growth in lack of skills, according to the American Management Association, is the increased skill demands of the jobs, not the reduced quality of the workers' training.

A lack of skilled workers can cost U.S. companies their competitive edge. For example, in 1993, slightly more than one-quarter of U.S companies cited lack of skilled workers as a barrier to growth. By 1998, that proportion had grown to nearly 70 percent. Should this trend continue, virtually all companies will point to a lack of skills as impeding their growth within the next five years (Figure 5).

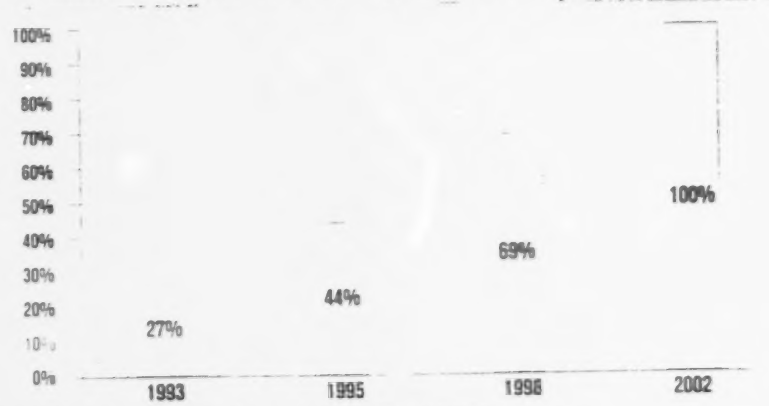
Additionally, jobs requiring training beyond high school will grow nearly twice as fast as those requiring less training, according to the U.S. Bureau of Labor Statistics, increasing the pressure on postsecondary educational institutions to accommodate demand (Figure 6). So the concern is not only whether the supply of workers will be equal to the demand,

Figure 4: Percentage of Applicants Lacking Necessary Skills to Perform the Job They Sought, 1996–99



Source: American Management Association

Figure 5: Percentage of Companies that Consider Lack of Skills a Barrier to Growth, 1993–2002 (projected)



Source: Coopers and Lybrand Trendsetter Barometer and National Alliance of Business

but also, even more importantly, whether the skill levels of those workers will meet the needs of employers and whether postsecondary institutions will have the capacity to train the workers needed.

These points raise questions about not only the amount of training workers should receive, but also the type of training. The training must match what employers need workers to know, and it must be delivered fast enough to meet employers' immediate and future demand for qualified workers. No longer can workers master only one set of skills to gain lifetime employment. Technical and soft skills — those that enable workers to process information, respond to changing environments, work in teams and manage complex projects — will continue to replace static skill sets as employers react to changes and innovation in the marketplace.

Postsecondary and other training institutions have begun responding to this need by offering a proliferation of short program degrees and certificates emphasizing both technical and nontechnical skills. Such programs are

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becoming increasingly important to employers looking to fill a growing number of positions for which too few adequately trained workers are available.

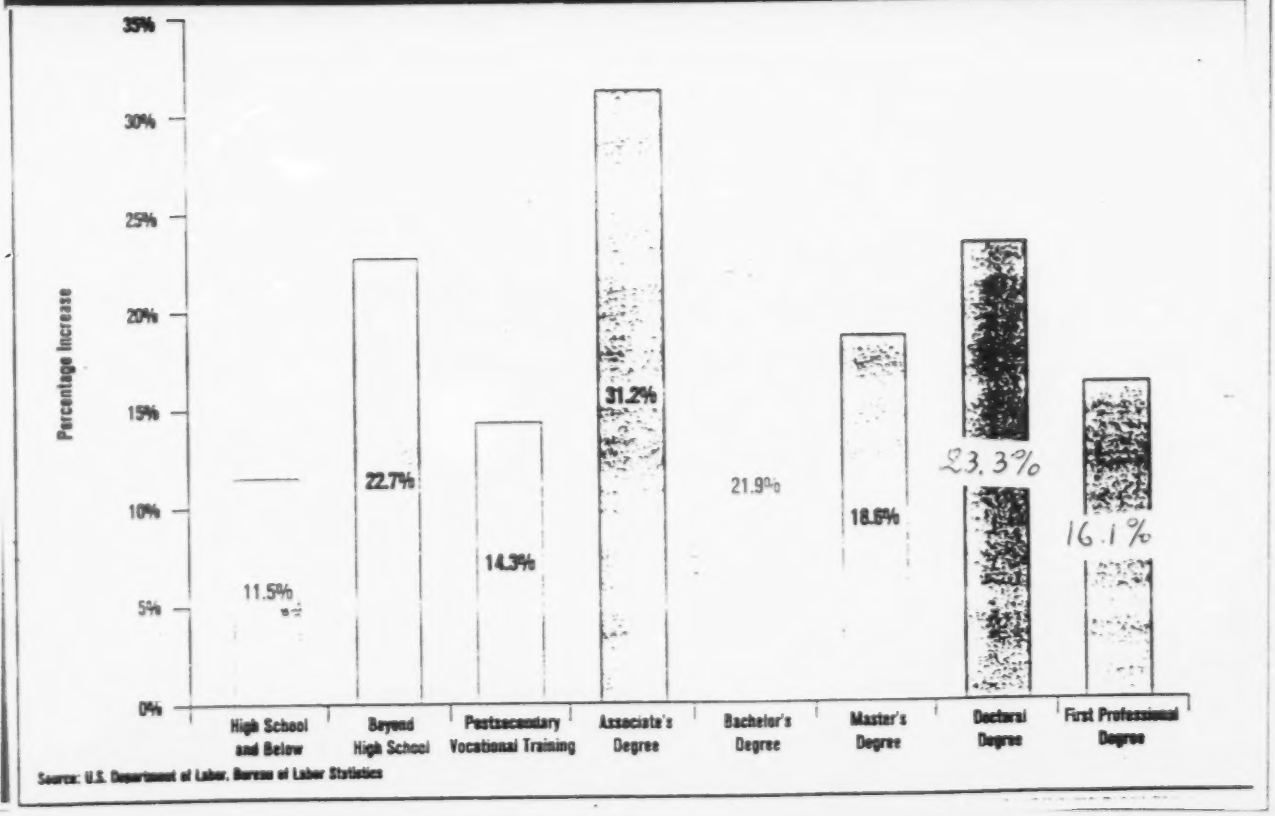
The key is the speed with which workers can obtain relevant training in as timely and cost-effective a manner as possible. Alternative methods of educational delivery already have emerged, particularly distance learning and online "e-learning," both at existing educational institutions and through new, virtual postsecondary institutions and training organizations.

The significance of this trend is twofold: Many more people, both workers and students, have access to education and training, and the potential to quickly expand, or "scale-up," the delivery of this training is exponentially increased, in terms of both program content and student access.

Having a more flexible and better-skilled workforce enables companies to partially compensate for the shortage of available workers.

Employers are beginning to use these training methods — traditional, virtual and hybrids of the two — to enhance the skills of existing employees. In addition, many companies partner with community colleges and training organizations to develop programs tailored to specific company needs; others provide general instruction to workers seeking skills in specific areas. As a result, companies' training budgets have climbed steadily in recent years, reaching $62.5 billion in 1999, according to *Training* magazine. At current spending rates, training budgets are likely to

Figure 6: Growth in Jobs by Educational Requirement to 2008 (projected)



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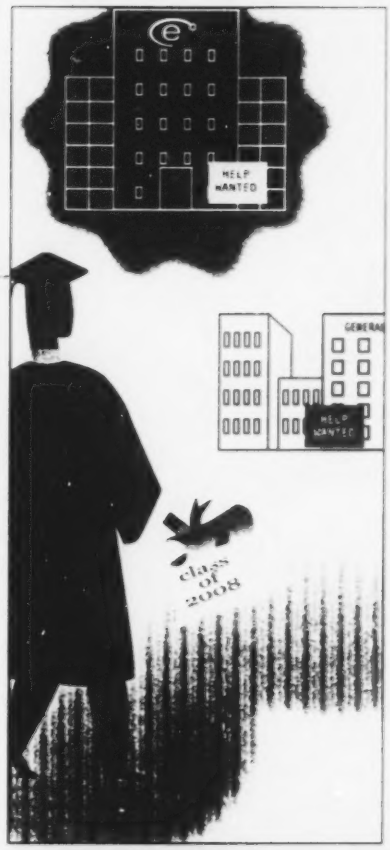


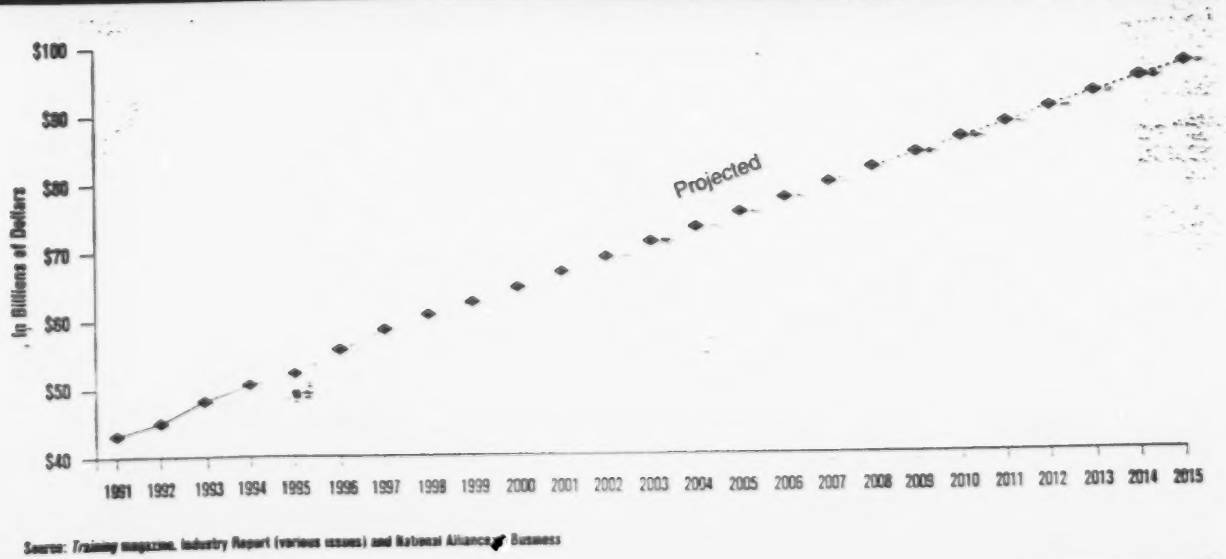
approach $100 billion annually by 2015 (Figure 7).

The Stakes are High

The end result of all this education and training will be a more efficient, flexible and smarter workforce. Workers will become decisionmakers at all levels of the production cycle, eliminating the costly delays of waiting for decisions from a central location or upper management. This is key to the future success of U.S. companies, particularly in the face of the ongoing and worsening shortage of workers. Having a more flexible and better-skilled workforce enables companies to partially compensate for the shortage of available workers.

How the looming worker shortage will be overcome is not entirely clear. The recently passed H-1B visa legislation to increase legal immigration of highly skilled workers will address part of the problem, but other, more systemic solutions are needed. Rapidly changing technology and a dynamic work environment are transforming the workplace, increasing the reliance on workers at every level who can both master the technical demands of the job and use critical thinking skills to make key decisions. To avoid severe shortages in adequately trained workers, America's employers and educators will need to work together more closely to ensure that workers receive the type of training that employers need. As a result, postsecondary and other training organizations' ability to train workers with the appropriate skills and to make learning experiences available in a quick, on-demand fashion will become increasingly important to both employers and workers and, ultimately, to the country's economic future.

Figure 7: Corporate Spending on Training, 1991–2015 (projected), in Billions of Dollars



Source: *Training* magazine, Industry Report (various issues) and National Alliance of Business

Workforce Economics

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The National Alliance of Business is a national business organization focused solely on increasing student achievement and improving the competitiveness of the workforce. The Alliance's members include CEOs and senior executives of Fortune 500 companies, educators, and business-led coalitions. Together, the Alliance and its members are leading efforts to strengthen the link between education and the workplace and promote training and lifelong learning.

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The Real Whirled. In a creative move away from traditional classroom training, Whirlpool is giving new marketing hires a dose of "reality-based training," according to *The New York Times*. Trainees spend two months living together in a house equipped with Whirlpool dishwashers, refrigerators, washers, dryers and other appliances. They put the equipment through the same daily use (and abuse) as ordinary consumers do — and learn to market to customers in the process. Apparently Whirlpool discovered that cooking and cleaning are not among the skills mastered by recent college graduates.

Pay Gap Closing. The wage gap between women and men, stalled since the mid-1990s, is expected to narrow in the coming years, reports *Business Week*, citing a study published this fall by Cornell University economists Francine Blau and Lawrence Kahn. In 1999, women with full-time jobs earned 76.5 cents for every dollar men earned, compared to 61 cents in 1974. The reason? Women's skills and on-the-job experience are catching up to those of men, after a pause in these factors in the last decade.

Vanishing Executives. Within the next five years, some companies — particularly larger, established firms — will bid adieu to 40 percent to 50 percent of their top executives as they retire, according to data from Development Dimensions International, a consulting firm, in *Training* magazine. This may leave companies in the lurch and in need of new leadership.

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